PULMONARY FUNCTION OF FISH MONGERS IN PORT HARCOURT METROPOLIS

ABSTRACT

Aim: This study investigated the pulmonary function test of fish mongers in Port Harcourt metropolis.
Study Design: Cross-sectional study
Place and Time of Study: Port Harcourt, Rivers state, Nigeria. January 2021 – July 2021.
Method: A Total of 100 subjects were used in the course of this study with 50 been the fish mongers and the other 50 non fish mongers. The Forced expiratory volume (FEV), the force vital capacity (FVC), the FEV_1/ FVC Ratio among fish mongers and non-fish mongers were determined.
Results: This study found out that there was elevated levels of systolic and diastolic blood pressures in the fishmonger subjects compared to their non-fishmonger counterparts. The FVC, FEV_1 and FEV_6 mean values were found to be non-significantly reduced in the fishmonger group compared to their counterparts. Even though these changes are marginal they could mean result in obstructive pulmonary disease on a long-term duration.
Conclusion: These findings suggest that it is important that fishmongers and their likes be more conscious to their predisposition to the risk of respiratory and cardiovascular diseases. As occupation predisposes them to negative impact on their lung health, and, subsequently, on cardiovascular health following constant exposure to smoke and physical inactivity.

Keywords: Fish monger, fish-smoking, smoke inhalation, lung function

1 INTRODUCTION

Fish is a common basic food and is on high demand by most people, not only because of its wide availability, but because it is known as a cheap and safest source of animal protein[1]. Its amino acid profile, low cholesterol content, high vitamins and minerals content as well as fatty acid profile makes it stands out among sources of animal protein[1].

According to the FAO, fishery is typically defined in terms of the "people involved, species or the type of fish, area of water, method of fishing, class of boats, and purpose of the activities or a combination of the foregoing features. Fisheries may involve capture of wild fish (captured fishery) or raising fish through fish farming or aquaculture (culture fisheries). A varieties of method are used in this harvest, ranging from the hook and line by the small time fishers to the use of mechanized seines using big vessels like purse seiners, long liners, driftnets and other nets, captured fisheries can be broadly classified as industrial/commercial scale, small scale or artisanal, and recreational[1]. Fishing is done on a continuous basis in River line communities in Nigeria with a bumper harvest mostly during dry seasons. Fish harvested from its natural environment is highly susceptible to deterioration without any preservation or processing

measures[2]. Fish processing involve all activities associated with fish and fish products between the time fish are caught or harvested, and the time the final product is delivered to the consumer.

The processing methods are smoking, frying, boiling and fermentation. Smoking which is the oldest, convectional and most common methods (curing process) used where the heat from the fire dries the fish while chemicals from the smoke impregnate the flesh[3]. It could be a Hot-smoking which reduces microbiological growth and increase the shelf life or preserve the fish, operate at high temperature (between 65°C and 120°C) and the antiseptic components of smoke hinder deterioration[3]. It could also be cold smoking process (between 29°C and 35°C) in which the temperature allow the fish not to be well cooked but add flavor to the fish or Smoke drying (the product first not smoke) which involves drying with temperature between 45°C and 85°C[3]. This is commonly done using a traditional/local fish smoking drum, fish smoking mud, Tripod fire place, oven (mid, box oven-wooden, steel, mud, blocks) imbibed with wasteful of fuel, usually firewood that has become both scarce and expensive or modern or improved equipment[4]. Various hazards has been reported in fish processing industry which ranges from redness/swelling of the eye (which is the commonest) to mechanical and electrical accidents, bacterial and parasitic infections, noise induced hearing loss, allergic respiratory diseases and stress related health problems[5]. Pulmonary diseases are some of the common illness experienced by fish mongers due to the Smoke inhaled while smoking fish and fryers. They are of serious health risks as it can cause asthma and other respiratory ailments[6]. Also workers could be exposed to smoke particles that contain potential or confirmed carcinogens such as polycyclic aromatic hydrocarbons (PAHs). Inhaling harmful smoke can inflame the lungs and airway, causing them to swell and block oxygen. This can lead to acute respiratory distress syndrome and respiratory failure. Smoke inhalation is a common practice among fish mongers[7]. Smoke inhalation injury, either by itself or in the presence of a burn, is now well-recognized to result in severe lung-induced morbidity and mortality. The most common cause of death in burn centers is now respiratory failure[8]. The aim of this study was to determine the pulmonary function test of fish mongers in Port Harcourt metropolis.

2. METHODS

2.1 Study Area

This study was carried out among fish mongers located at Bundu water side in Port Harcourt Township Rivers State and its environs.

2.2 Study Design

The cross sectional study design were adopted in this study involving fish mongers in Port Harcourt metropolis and its environs.

2.3 Study Sample

The target population for the study involve all fish mongers in Port Harcourt metropolis and its environs. Fifty (50) fish mongers located in Port Harcourt Township (Bundu waterside) within Port Harcourt metropolis and its Environs were selected for this study using the clustered sampling technique. The fish mongers were those without health challenges and have been involved in the business for not less than 2 years.

2.4 Data collection

A PROFORMA data collection sheet was used to record value of lung function indices FVC (%), FEV1 (%), FEV6, FEV1/FVC, PEF obtained according to standard spirometric assessment methods[9].

2.4 Ethical Consideration

Ethical clearance was obtained from the Institutional Ethics Review Board of the Rivers state university teaching hospital. Permission for the conduct of the study was also obtained from the University Hospital. Written informed consent was obtained from Market Union Organization and the fish mongers explaining the procedure for the test, and obtaining permission to proceed. No personal identifiers of the respondents were collected for the purpose of this study.

2.5 Data Analysis

Results of lung function indices obtained were presented as mean ± standard deviation. The independent T-test was used to compare mean lung function indices obtained from the study participants. All analysis was done at a 95% confidence interval using the Graphpad Prism Software v6 and values of $p < 0.05$ were taken as statistically significant.

3. RESULTS

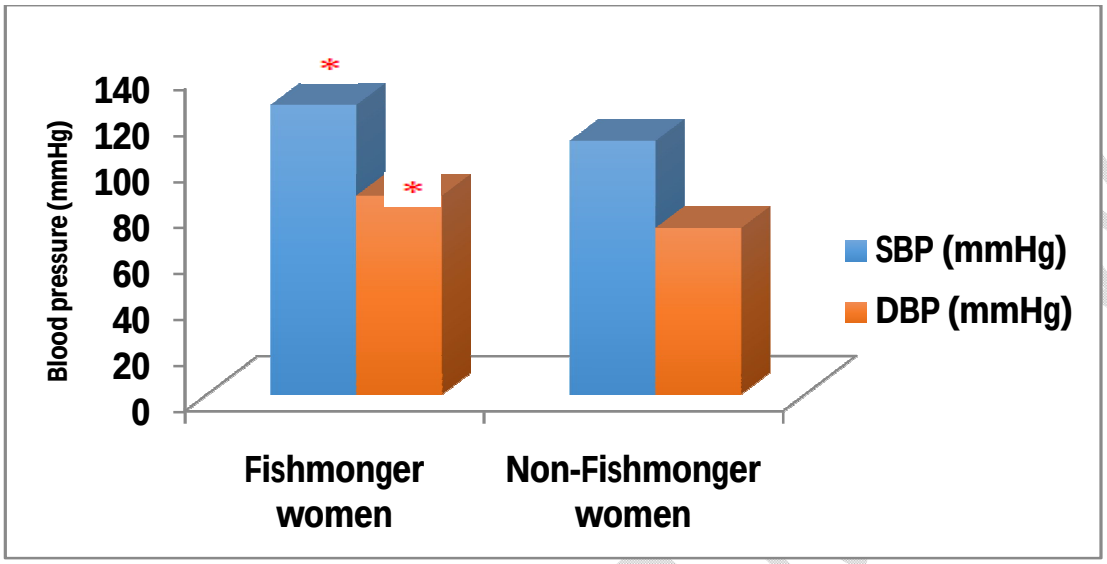

Figure 1: Blood Pressure Levels (mmHg) in Fishmonger women and Non-Fishmonger Women in Port Harcourt.

*Values are expressed as Mean ± SD; n=40; * statistically significant at p<0.05 when compared to non-fishmonger women.*

The data represented in Figure 1 shows the age distributions of the fishmonger and non-fishmonger participants respectively of the present study. The mean ages of both categories of the subjects indicated 39 years for fishmongers and 20.89 for non-fishmongers, and their mean BMI values were 25.71Kg/m^2 and 22.55 Kg/m^2 respectively. The difference between the BMIs were found to be significantly ($p<0.05$) different.

The outcome on the blood pressure also reveals significantly ($p<0.05$) elevated levels of systolic and diastolic blood pressures in the fishmonger subjects when compared to their no-fishmonger counterparts.

The results in Table 1 shows the comparison of some lung function indices between Fishmonger women and Non-Women in Port Harcourt. The lung function indices investigated include Forced vital capacity (FVC), Forced expiratory volume in one second (FEV_1), Forced expiratory volume in six seconds (FEV_6), the percentage of the FVC expired in one second (FEV_1/ FVC ratio) and peak expiratory flow (PEF).

The outcome reveals marginally ($p>0.05$) increased FEV_1/ FVC ratio and PEF levels in the Fishmonger subjects compared to the non-fishmonger subject. On the other hand, the FVC, FEV_1 and FEV_6 mean values were found to be non-significantly ($p>0.05$) reduced in the fishmonger group compared to their counterparts.

Table 1: Comparison of some Lung Function Indices between Fishmonger women and Non-Women in Port Harcourt

S/N	Parameters	Study Groups	
		Non-Fishmonger Women	**Fishmonger Women**
1.	**FVC (%)**	67.43 ± 32.30	80.20 ± 49.67*
2.	**FEV1 (%)**	63.01 ± 17.84	69.30 ± 14.71
3.	**FEV6**	2.78 ± 1.27	2.51 ±1.43
4.	**FEV1/FVC**	88.30 ± 21.89	85.90 ± 21.87
5.	**PEF**	80.72 ± 24.71	66.36 ± 1998

** statistically significant at p<0.05 when compared to non-fishmonger women.*

4. DISCUSSION

Increasing prevalence of respiratory disorders among smoked fishmongers, and vendors exposed to cooking fumes in an open-air hawker center have been reported in previous research[10]. Similar research concluded that exposure to cooking fumes from either the use of fossil fuels or liquefied petroleum gas (LPG) has been shown to be associated with adverse respiratory health

effects and that the type of fuel used for cooking and duration of work were associated with increased prevalence of cough[3, 11, 12]. The present study evaluated the lung function pattern in local fishmonger women and discussed its finding in the following paragraphs and found markedly elevated levels of systolic and diastolic blood pressures in the fishmonger subjects compared to their non-fishmonger counterparts. This is consistent with the reports of adverse respiratory and cardiovascular health effects have been associated with fishmonger and related occupations[7, 13, 14]. The present study also found that the FVC, FEV_1 and FEV_6 mean values were found to be non-significantly reduced in the fishmonger group compared to their counterparts. Even though these changes are marginal they could mean result in obstructive pulmonary disease on a long-term duration. This position is validated by the report of Olaoye et al[3]. However, severe respiratory effects of biomass fuel combustion on prolonged exposure to burning or smoke from cooking as found among rural fish smokers in a Nigerian fishing settlement[6, 14, 15].

CONCLUSION

Since smoking and second hand smoking and their associated occupations and sedentary lifestyle have negative associated with healthy lungs function and other physiologic parameters, it is important that fishmongers and their likes be more conscious their predisposition to the risk of respiratory and cardiovascular diseases. As occupation predisposes them to negative impact on their lung health, and, subsequently, on cardiovascular health following constant exposure to smoke and physical inactivity.

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